

### **REMARKS**

In this Amendment, Applicant has amended Claims 6 and 10 to overcome the rejection and specify different embodiments of the present invention. The support for the amendment can be found throughout the specification. In addition, the specification has been amended to correct typographical error in the spelling of "Geropon". It is respectfully submitted that no new matter has been introduced by the amended claims and specification. All claims are now present for examination and favorable reconsideration is respectfully requested in view of the preceding amendments and the following comments.

#### **REJECTIONS UNDER 35 U.S.C. § 103:**

Claims 6 – 10, 12 and 13 have been rejected under 35 U.S.C. § 103 as allegedly being unpatentable over Arnold (U.S. 5,612,285) in view of Kuchikata et al. (U.S. 6,228,807), hereinafter Kuchikata.

Applicant traverses the rejection and respectfully submits that the embodiments of the presently claimed invention are not obvious over the cited reference because they are significantly different from the disclosure of Arnold and Kuchikata. The Examiner alleges that both references "teach a process of making solid in the form of ammonium salt which contains surfactants in solid forms which embrace presently claimed invention. See the entire documents". Applicant respectfully disagrees with such opinion for the following reasons:

#### **Analysis of the Arnold reference (US 5,612,285)**

Arnold teaches and discloses a method for preparing a dry, free-flowing, non-sticky herbicidal composition in granule form. This process comprises essentially two alternative methodologies set forth in its independent claims 1 and 18. Both alternatives are basically equivalent (as far as the obtained product is concerned) and do comprise

three steps, of which the two first ones are mixing steps. Thus, for instance, claim 1 discloses a process comprising:

(1) forming a homogeneous mixture of a **liquid surfactant at ambient temperature with the help of a solid extruder** ("below the melting point") which is a polyalkylenglycol having an average molecular weight of 1,000 to 15,000;

(2) **mixing** the homogeneous mixture **with Glyphosate or one of its salts**; and

(3) extruding the mixture to form the granules.

Similarly, claim 18 defines a process wherein the order of the mixing of the components is interchanged, **mixing the Glyphosate with the extrusion auxiliary in the first step (1), and mixing afterwards said mixture with the liquid surfactant (step 2).**

**Independently from the physical-chemical nature of the surfactants mentioned by Arnold in the specification of this patent, a question that shall be discussed below**, what is certain is that the process of present application is not only different from the process **claimed** by Arnold, but also that it is not a methodology that a person skilled in the art could consider obvious from the information disclosed in Arnold.

In fact, it is respectfully submitted that in the present application, at the first step, **liquid components are not mixed with solid components**; but the first step does comprise the **mixing of three ingredients that are solid at ambient temperature** (the Glyphosate, the surfactant and the ammonium bicarbonate).

Secondly, the present invention's process **does not use any extrusion auxiliary**, since it does not require the adding of any additional adjuvant to make possible the extrusion of the product resulting from the mixing and kneading of the three ingredients.

Furthermore, **in the presently claimed process, there is only one mixing step** of the ingredients, while **in Arnold, process there are always carried through at least two successive mixing steps**, in which either the surfactant and the extrusion auxiliary are mixed first prior to being mixed with the Glyphosate or one of its salts, or the Glyphosate or one of its salts are mixed with the extrusion auxiliary prior to its mixing with the liquid surfactant. In addition, in the two alternatives proposed to perform the

Arnold process (see column 6, General Process Description) and in all the Examples included in the patent, **there is always a certain amount of water added** to facilitate the dissolution of the auxiliary extrusion component. In the process of the present invention, **it is not necessary to add water to the ingredient mixture, since it is essentially a dry way process.**

It is important to stress that in the presently claimed process, in the stage of the mixing of the ingredients, **there occurs a solid-solid chemical reaction** between Glyphosate and the ammonium bicarbonate. To the contrary, in Arnold's process, **there is no chemical reaction** between the components of the mixtures, since in the mixing steps Glyphosate is always used as a free acid or as a Glyphosate salt prepared **previously prior to its being used in said process.**

Finally, in Arnold's process, **the surfactants used are always liquid at ambient temperature while in the presently claimed process, the surfactants used at ambient temperature are solids.**

In this regard, it may be noticed that in the independent claims of the Arnold (claims 1 and 18), it is explicitly stated that the surfactant used at ambient temperature is liquid.

Furthermore, in the second paragraph of page 5 of the Office Action, the Examiner declares that, in Arnold, there are mentioned imidazoline derivatives, taurates and an alkanomide, which in present application are indicated to be solid at 25°C.

It is Applicant's understanding that the Examiner intended to point out that, in Arnold's process, there might be used solid surfactants at ambient temperature instead of liquid surfactants and that consequently the mentioning of solid surfactants in the Arnold patent would be for a person skilled in the art a **motivation** for using solid surfactants instead of surfactants that at ambient temperature are liquid.

Applicant respectfully disagrees with the Examiner's opinion because in column 2, lines 27 to 30 of Arnold, a person of ordinary skill in the art is instructed not to substitute a solid surfactant for a liquid one.

In fact, when making reference to patent EP 0 206 537, Arnold explains in his patent why the surfactants he uses in his process must be necessarily liquid at ambient temperature, by stating in column 2, line 27, that "... it does not disclose or render obvious applicant's herbicidally efficacious composition comprising a high molecular weight PEG and one or more surfactants which are liquid at ambient temperatures ...".

Furthermore, in column 4, lines 16 to 19, of the Arnold patent, such conception receives additional support when the expert is instructed that **"However, the greatest benefit of this invention is realized when the surfactants chosen are supplied as liquids at ambient temperature..."**.

Hence the person skilled in the art would have no obvious motivation for departing from the teachings of the Arnold patent inasmuch as, in addition, in all the Examples given in the Arnold patent what is used are liquid surfactants at ambient temperature and in the independent process claims 1 and 18, such surfactants are also defined as liquid.

In summary, on the basis of the differences between the two methods analyzed above, we deem that the **process claimed in present application is novel and nonobvious against the Arnold patent.**

Moreover, and against the opinion given by the Examiner, the presently claimed process **would not have been obvious to one skilled in the art** since, without having examined the contents of the present application, **a person skilled in the art could not have considered obvious to modify the Arnold process in a substantial way**

- **by eliminating the extrusion auxiliary,**
- **by using only a solid surfactant,**

- by preparing *in situ* the Glyphosate salt in the same reactor in which all the ingredients are mixed,
- by processing all the ingredients in a sole mixing step, and
- by avoiding any addition of water, so as to form at the end a mixture capable of being easily extruded into granules.

It is evident that in the Arnold patent there is not contained any suggestion or information that might have induced a person skilled in the art to bring about in an obvious manner so many simultaneous changes in the process described as to reproduce the presently claimed process and thereby attain, in an obvious manner too, a product having properties similar to those of the products given as examples in said patent.

For the above reasons, Applicant considers that the presently claimed process is not obvious as against the information disclosed in Arnold.

#### **Analysis of the Kuchicata reference (US 6,228,807 B1)**

Kuchicata claims an herbicidal composition comprising Glyphosate, or one of its soluble salts, and at least a surfactant that is **liquid** in its net form at 25° C (see claims 1 and 4 to 8). Even though none of the claims of Kuchicata has any connection with the subject matter claimed in the present application, since the present application relates to a process for preparing a herbicidal composition and not to the product obtained by said method, in the description of the Kuchicata patent there are described several methods for obtaining the herbicidal compositions containing Glyphosate or its water soluble salts.

Consequently, Applicant discusses in the following the methods disclosed in the description of Kuchicata and shall see that none of those techniques does defeat either the novelty or the non-obviousness of the process claimed in the present application.

In the section bearing the title "Detailed Description of the Invention", Kuchicata begins by pointing out that the invention comprises a herbicidal composition containing a

water soluble Glyphosate salt and optionally a surfactant that is **liquid** at 25° C (see column 4, lines 20 to 27). In this section (lines 34 to 48, column 5), it is indicated how soluble Glyphosate salts can be prepared and which are the liquid surfactants that are appropriate for being mixed with said Glyphosate salts (lines 53 to 67 of column 5 and lines 1 to 30 of column 6), and at the end it is specified that when the composition includes a liquid surfactant, the process comprises the mixing of the soluble Glyphosate salt with one or more of said liquid surfactants.

In the section of “Description of the Invention” of Kuchicata, there is no reference or suggestion that might induce a person skilled in the art to bring about a process for preparing a herbicidal composition in which Glyphosate, ammonium bicarbonate and surfactant are simultaneously mixed and kneaded to form a homogeneous mixture that could subsequently be processed by extrusion, and there is no disclosure either that the surfactant used should be a solid at ambient temperature.

In fact, farther on in column 8 (Examples), Kuchicata explains that **after** the manufacturing of the Glyphosate salt, at least one surfactant may optionally be added, preferably the product called MON-0818 (lines 61 to 65 of column 8), which, as we have shown in this case, is a liquid surfactant.

Furthermore, Kuchicata explains that **the addition of the surfactant produces typically a very stiff dough** (lines 65 and 66 of column 8), but that such technical drawback is overcome by means of an equipment appropriate for mixing such type of product.

It is evident that not either in this chapter of “Examples” the patent does induce a person skilled in the art to depart from the teachings disclosed by Kuchicata, a fact that becomes even more evident through the contents of the specific examples included in the following (line 41 and following in column 10).

In fact, none of the 45 specific examples of Kuchicata discloses a process for preparing a herbicidal composition having simultaneously all the novel and inventive characteristics of the process claimed in the present application, namely:

A sole step for the mixing and kneading of the ingredients by the dry process;

A sole step for the mixing, kneading and simultaneous chemical reaction of the ingredients by the dry process;

A sole step for the mixing of Glyphosate, ammonium bicarbonate and a solid surfactant at 25° C.

In addition, it is necessary to point out that Kuchicata, i.e. US 6,228,807 B1, is a continuation of application 08/726,538 filed October 7, 1996, and that patent US 5,872,078 is a division derived from the same application 08/726,538.

Therefore, the 45 examples included in the Kuchicata '807 patent are identical to the 45 examples of patent '078. Consequently, for an exhaustive review of the contents of said examples Applicant refers to its last response filed with the USPTO, where Applicant did a comparative analysis of the contents of the 45 examples of patent '078 as against the process claimed in the present application.

Nonetheless, it is necessary to remember that in the previous response, Applicant mentioned that, in Examples 3, 4 and 5, Kuchikata establishes that the processes used for preparing the **ammonium Glyphosate / liquid surfactant mixtures show technical drawbacks already at the laboratory stage**. Such drawbacks can be summed up in the following conclusion: Mixtures of Glyphosate, ammonium bicarbonate and a liquid surfactant yield sticky solid mixtures difficult to handle, with incomplete chemical reaction and must undergo heating in order to eliminate water, not ensuring however its transformation into free flowing dust.

Nonetheless, Kuchikata has proposed simultaneously a solution for such technical drawbacks since it discloses, in the examples examined, that a moderate technical treatment (at 60° C) would make it possible to transform the compositions of the invention into mixtures easy to handle and to transport. Notwithstanding, said technical

treatment implies necessarily a further grinding step in order to transform the dry solid dough into a product easy to handle and to transport.

In the remaining examples of US'078 = US'807 patents, examples 6 to 45, Kuchikata proposes several additional formulations containing ammonium glyphosate.

Nonetheless, all the formulations exemplified by Kuchikata in these additional examples do contain liquid surfactants, and it is worth considering the formulations of examples 9 and following, in which use is made also of considerable percentages of ammonium sulfate and/or sodium sulfate.

Both ammonium sulfate and sodium sulfate are optional components of the herbicide formulations proposed by Kuchikata.

However, Kuchikata does not specify the reason for which said (sodium and ammonium) sulfate salts are added to many exemplified formulations, although a person skilled in the art knows that said optional components **are not surfactants** and that their inclusion in the formulations exemplified by Kuchikata would be an inclusion as inert filling components with the aim of improving the structure and texture of the compositions prepared and, consequently, make their handling and granulating more easy.

In summary, Kuchikata proposes herbicide formulations containing ammonium glyphosate wherein **liquid surfactants are always used at ambient temperature**, and discloses furthermore thermal treatments for eliminating water, if necessary, possible and necessary grinding steps and certain filling agents in order to improve the physical properties of the formulations prepared in the examples.

In other words, even though patent US'807 discloses in its description and examples some technical drawbacks coming up when the ingredients of the claimed formulations are mixed, said patent does also mention the appropriate technical solutions to overcome said drawbacks. This means that a person skilled in the art, facing a possible



reproduction of the invention of patent US'807 would not have had any reason to depart from the teachings of said patent by imagining alternative solutions to those proposed by Kuchikata.

Moreover, if the solution to the technical drawbacks mentioned by Kuchikata had been a different one, for instance more simple and economical, and obvious for an expert in the matter, it is understandable that it had been the experts of Monsanto (owner of the patent) which had been the first to propose such a solution, naturally including said solution in Kuchikata.

Applicant respectfully submits that the non-obviousness analysis must be carried out necessarily without having in view the contents of the application filed by present applicant. The technical solution proposed by the present inventor should not been taken into account for the obviousness analysis. Otherwise, this would imply an impermissible hindsight analysis of the application i.e. to deem a technical solution to be obvious once it has been divulged. Applicant respectfully submits that the question the Examiner should pose to herself, stepping into the shoes of the person skilled in the art, is the following:

Why did Monsanto disregard the solid surfactants at ambient temperature for preparing the formulations of patent US'807 if, as the Examiner maintains, this solution was obvious to experts in the matter?

Applicant believes that the probable answer to this question is to be found in the very description and examples of patent US'807. In fact, in the first place, it would be evident *a priori* that, in order to attain an intimate and homogeneous mixture of the two ingredients (for instance, a glyphosate salt and a surfactant), it would be preferable that one of said ingredients be a liquid in which the other ingredient could disperse or dissolve.

Secondly, if the aim is to obtain an homogeneous mixture of three ingredients (for instance, Glyphosate, ammonium bicarbonate and a surfactant) in which a chemical neutralization reaction is to occur, it would also be *prima facie* evident that the surfactant to be selected should be liquid, since a chemical reaction occurs usually more easily in a liquid phase than in a solid-solid system.

This situation of mixing and chemically reacting the three ingredients is mirrored in example 4 of patent US'807. Notwithstanding, Kuchikata has stated that in this system the chemical reaction (of Glyphosate with ammonium bicarbonate) was slow and incomplete.

In view of the results of the experience from example 4, we think that the expert would disregard the use of solid surfactants in the experience of example 4, since the use of liquid surfactants does not yield the results expected, even though it is known that liquid surfactants have physical advantages as against solid ones.

It is probable that from such initial experiences, exemplified in patent US'807, and perhaps from other not less reasonable arguments, the Monsanto experts had decided to exclude from the patent the application of solid surfactants.

What is certain is that **all the technical drawbacks posed in patent US'807 have now been overcome, unexpectedly and surprisingly, by the present application**, in which a simple, different and non-obvious solution is proposed to overcome the technical inconveniences that turned up in Kuchikata.

In fact, the process claimed of the present invention comprises essentially the mixing of the following dry ingredients: glyphosate, ammonium bicarbonate and a solid tensioactive agent at ambient temperature, with the result being **a solid mixture easy to handle and to process into granules, scales and dust**.

**In this process, as a result of mixing and kneading the ingredients, no dough difficult to handle or to process is formed, no additional thermal treatment is needed to arrange and condition the mixture, no filling substances are required to improve the rheological qualities of the mixture, and the neutralization reaction is complete.**

All these advantages derive from a simple, novel and fundamentally inventive process over patent US'807, since the Kuchikata patent has overcome the technical

**drawbacks of the mixing of the ingredients by means of different techniques**, and this has been achieved by making use of thermal treatments, adding water, filling substances and, it is worth remembering, using liquid surfactants as main ingredients of the herbicide formulations.

**The combination of the information contained in patents US 5,612,285 and US 6,228,807 does not defeat the non-obviousness of the process claimed in the present application**

Firstly, Applicant wishes to point out that the two patents opposed by the Examiner, US'285 and US'807, do belong to Monsanto Company, i.e. the same group that is searching and developing a great part of the technologies related to preparing the herbicidal compositions containing Glyphosate.

Furthermore, those two patents derive from patent applications filed respectively in 1992 and 1988, i.e. the compositions and methods described in those two patents had been known to Monsanto for many years.

On their turn, the methods described in the two patents represent two different methodologies for obtaining a product with similar characteristics (herbicidal formulations based on Glyphosate, in the form of dry, water soluble granules).

Now, in Applicant's opinion, such circumstance is **the first certain sign that the process claimed in the present application, is not an obvious technology** that could have been deduced by a person skilled in the art from the Monsanto patents.

Actually, if, as the Examiner suggests, the combination of the information contained in the two Monsanto patents had induced the expert in an obvious manner to carry out a process as the one claimed by present application, the Monsanto experts should have been logically the first in doing the experimental work and in filing the corresponding patent application.

This did not happen regardless of the years elapsed since then and notwithstanding the fact that the presently claimed method shows evident technical advantages over the processes disclosed in patents US'285 and US'807.

**The second certain sign backing the non-obviousness of the process claimed in the present application** lies precisely in the fact that Monsanto has thoroughly explored the technologies for preparing the Glyphosate herbicidal formulations in the form of water soluble granules, which is made evident by the existence of patents US'285 and US'807 relating to the subject.

Now, the application which led to the issue of patent US 6,228,807 was originally filed December 30, 1988 (application No. 07/292,499) which mean that it **represents a technology that preceded the one disclosed in patent US 5,612,285**, since the latter was filed originally July 31, 1992 (application No. 922,715).

Since the methods disclosed in patent US'807 have technical drawbacks (which have been discussed above), it is reasonable to assume that the methods disclosed in the subsequent patent US'285 may be considered an attempt to overcome such technical drawbacks.

It is necessary to remember at this point that patent US'807 describes and gives examples of a process using liquid surfactants and that said technique presents essentially serious technical drawbacks concerning the sticky and difficult-to-process nature of the product resulting from the mixing of the liquid surfactant with the Glyphosate salt (column 8, lines 65 and 66).

Nonetheless, the drawbacks mentioned and shown in examples in said patent US'807 were seemingly overcome by means of the alternative technologies described in subsequent patent US'285, particularly claimed in independent claims 1 and 18.

Consequently, the solution proposed by Monsanto to overcome the technical drawbacks mentioned in its patent US'807 was the use of an extrusion auxiliary,

consisting of a solid polyalkylenglycol at ambient temperature, as an extrusion adjuvant for the mixing of a Glyphosate salt with a liquid surfactant.

It is evident that Monsanto could have attempted to overcome the technical drawbacks mentioned in its patent US'807 by substituting a liquid surfactant for a solid surfactant at ambient temperature, but **such a solution was ruled out** inasmuch as the experimental assays (see example 4 of patent US'807) disclosed that, in the presence of a liquid surfactant, the neutralization reaction between the Glyphosate and the ammonium bicarbonate is slow and incomplete, hence suggesting that the reaction between the Glyphosate and the ammonium bicarbonate, if in presence of a solid surfactant, would be even slower and more incomplete since it would be a solid-solid reaction system.

**Therefore, the technical solution proposed and claimed in the present application is perfectly inventive since it could not only not have been obviously deduced by a person skilled in the art from the combination of Arnold and Kuchikata, but would also be contrary to the teachings suggested in said patents.**

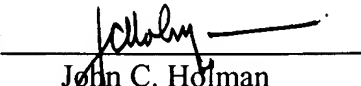
Therefore, the rejection under 35 U.S.C. § 103 has been overcome. Accordingly, withdrawal of the rejection under 35 U.S.C. § 103 is respectfully requested.

Having overcome all outstanding grounds of rejection, the application is now in condition for allowance, and prompt action toward that end is respectfully solicited.

Respectfully submitted,

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